

Agricultural Systems Technology I

Levels: Grades 9-12

Units of Credit: Year (1.0)

CIP Code: 010211

Prerequisite: None

COURSE DESCRIPTION

Students will learn basic skills related to the mechanical activities involved with agricultural production and service. Instruction includes field and laboratory application of the concepts taught. Students will develop skills in the areas of working hot and cold metal, tool reconditioning, plumbing, painting, bill of materials, small gas engines, and basic welding. Emphasis will be placed on safety and proper use of tools and equipment.

CORE STANDARDS, OBJECTIVES, AND INDICATORS

STANDARD

010211-01 Students will develop an understanding of the role of FFA in Agricultural Education Programs.

OBJECTIVES

010211-0101 Students will understand the history and organization of FFA.

- Students will explain how, when, and why the FFA was organized.
- Students will explain the mission and strategies, colors, motto, parts of the emblem, and the organizational structure of the FFA.
- Students will recite and explain the meaning of the FFA Creed.
- Students will explain the purpose of a Program of Activities and its committee structure.

010211-0102 Students will discover opportunities in FFA.

- Students will describe how the FFA develops leadership skills, personal growth, and career success.
- Students will identify major state and national activities available to FFA members.

010211-0103 Students will determine FFA degrees, awards, and CDE's.

- Students will explain the FFA degree areas.
- Students will identify the FFA proficiency awards.
- Students will explain various team and individual Career Development Events.

STANDARD

010211-02 Students will understand the benefits of a Supervised Agricultural Experience (SAE) Program.

OBJECTIVES

010211-0201 Students will determine the benefits of an SAE.

- Students will explain the importance of goals and career ladders.
- Students will define supervised horticultural/agricultural experience.
- Students will explain the benefits of supervised horticultural/agricultural experience programs.

010211-0202 Students will determine the kinds of SAE programs.

- Students will explain the difference between entrepreneurship and placement SAE's.
- Students will describe research/experimentation and exploratory SAE's.
- Students will explain the characteristics of a good SAE program and student responsibilities that are involved.

010211-0203 Students will research possible SAE programs.

- Students will identify career interest areas in agriculture.
- Students will identify skills needed for career success.
- Students will explain opportunities for SAE programs.

010211-0204 Students will plan an SAE program.

- Students will identify the steps in planning an SAE program.
- Students will identify the parts of an annual SAE program plan.
- Students will discuss the function of a training plan and/or agreement in an SAE program.

010211-0205 Students will implement SAE programs.

- Students will discuss the importance of keeping records on an SAE program.
- Students will explain the types of financial records needed to support a chosen SAE program.
- Students will identify standards to follow in keeping records on an SAE program.

STANDARD

010211-03 Students will identify hazards in Agricultural Mechanics.

OBJECTIVES

010211-0301 Students will identify the three conditions necessary for combustion.

010211-0302 Students will explain how to prevent fires in agricultural mechanics.

010211-0303 Students will identify the different classes of fires and the different types of fire extinguishers.

010211-0304 Students will describe the proper use of fire extinguishers.

010211-0305 Students will describe the different types of burns that can occur in agricultural mechanics.

STANDARD

010211-04 Students will demonstrate safe practices when working in laboratories and other enclosed facilities and when operating and working around laboratory equipment, materials, and chemicals.

OBJECTIVES

010211-0401 Students will explain how to create a safe place to work.

010211-0402 Students will describe what each safety color means and where it is used.

010211-0403 Students will describe how to select appropriate protective clothing and devices for personal protection.

STANDARD

010211-05 Students will demonstrate basic surveying and soil and water management skills.

OBJECTIVES

- 010211-0501 Students will describe land measurement and legal descriptions.
- 010211-0502 Students will measure land and use surveying equipment.
- 010211-0503 Students will apply profile-leveling techniques.
- 010211-0504 Students will apply differential leveling techniques.
- 010211-0505 Students will explain the importance of managing soil, water, and waste.
- 010211-0506 Students will install lawn irrigation equipment.

STANDARD

010211-06 Students will perform basic plumbing and soldering skills.

OBJECTIVES

- 010211-0601 Students will discuss and design plumbing systems.
- 010211-0602 Students will install and repair galvanized steel pipe and fittings.
- 010211-0603 Students will install and repair copper tubing and fittings.
- 010211-0604 Students will install and repair plastic pipe and fittings.
- 010211-0605 Students will maintain and repair plumbing systems.

STANDARD

010211-07 Students will select and properly use tools to construct wood projects.

OBJECTIVES

- 010211-0701 Students will select and use hand tools to layout, cut, shape, bore, hold, turn, drive, and wreck projects.
- 010211-0702 Students will use construction fasteners and hardware.
- 010211-0703 Students will select lumber for different applications.

STANDARD

010211-08 Students will paint and/or apply protective coatings.

OBJECTIVES

- 010211-0801 Students will prepare surfaces and select paints/preservatives.
- 010211-0802 Students will select applicators and apply finishes.

STANDARD

010211-09 Students will select, maintain, repair, and operate small engines.

OBJECTIVES

010211-0901 Students will use engine measurement tools and will gap/install spark plugs.

010211-0902 Students will use, classify, and service small gas engines.

010211-0903 Students will mix gas and oil for two-cycle engines.

010211-0904 Students will start, operate and shut down a small gas engine.

010211-0905 Students will prepare an engine for extended storage.

STANDARD

010211-10 Students will select, maintain, and safely operate oxyfuel welding equipment and systems.

OBJECTIVES

010211-1001 Students will apply oxyfuel welding processes and techniques.

010211-1002 Students will weld mild steel with filler rod.

010211-1003 Students will cut various thickness of mild steel with an oxy-acetylene cutting torch.

STANDARD

010211-11 Students will select, maintain, and safely operate shielded metallic arc welding (SMAW) and gaseous metallic arc welding (GMAW) systems.

OBJECTIVES

010211-1101 Students will apply shielded metallic arc welding techniques.

010211-1102 Students will apply gaseous metallic arc welding.

010211-1103 Students will weld mild steel in a flat position.

010211-1104 Students will weld butt welds in the flat position.

010211-1105 Students will weld fillet welds in the flat position.

010211-1106 Students will weld lap welds in the flat position.

STANDARD

010211-12 Students will fabricate with metal.

OBJECTIVES

010211-1201 Students will identify types of metals.

010211-1202 Students will plan and design projects with a bill of materials included.

010211-1203 Students will fabricate shop projects using metal.